

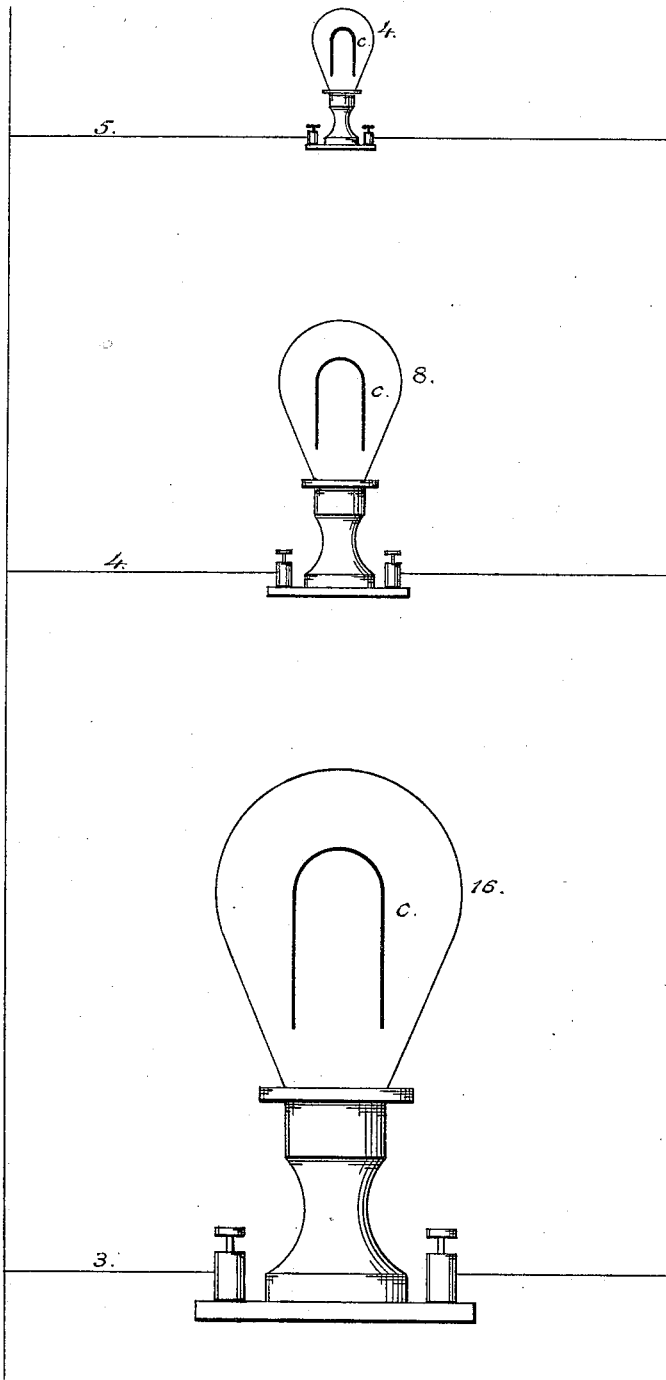
(No Model.)

T. A. EDISON.

SYSTEM OF ELECTRIC LIGHTING.

No. 251,542.

Patented Dec. 27, 1881.



Attest;  
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# UNITED STATES PATENT OFFICE.

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## SYSTEM OF ELECTRIC LIGHTING.

SPECIFICATION forming part of Letters Patent No. 251,542, dated December 27, 1881.

Application filed April 26, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Systems of Electric Lighting; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In a system of electric lighting wherein very many lamps are to be supplied from one central station, as I have described in prior applications, it is essential that the electro-motive force or pressure throughout the system be maintained constant. In such systems the lamps are then so proportioned, as to radiating-surface and resistance, that all the lamps in a system shall give a standard amount of light. Under some conditions it seems desirable that provision should be made enabling lamps giving less than the standard amount of light to be used in a system with standard lamps without any additional devices—such as resistances, &c.—that is, supposing that a lamp giving, under the normal pressure of current in the system, sixteen candle power be taken as the standard, it may be desirable to use in the same system lamps giving four, six, eight, or twelve candle power.

The object of this invention is to furnish a method for attaining this object. This method may be briefly stated as consisting in diminishing the radiating-surface and increasing the resistance of the lamp in the ratio which the diminished lamp bears to the standard lamp.

In the drawing, suppose 1 2 to be main conductors, upon multiple arcs thereto, 3 4 5, the lamps 16 8 4 being placed. Suppose that the conditions are such that with the standard radiating-surface and resistance of the lamps and standard pressure of the system the lamp 16 gives sixteen candle power, then, if in 8 the radiating-surface be diminished one-half, while its resistance is doubled in comparison with the standard lamp, this lamp may be used in the same system with the standard lamp, but

will give only eight candle power; or, to put it in figures, suppose the resistance of the standard lamp to be one hundred ohm and its radiating-surface ten millimeters, to use in the same system the lamp 8 its carbon *c* must have a resistance of two hundred ohms and a radiating-surface of five millimeters. Applying the same method, the lamp 4 may be made to give four candle power, and other lamps may be introduced giving any desired candle power.

In the drawing, for convenience of illustration, the lamps and their carbons are shown differing greatly in apparent size. They may be so constructed, but not necessarily so. The carbons may be of same length and the lamps apparently of the same size, the variations in size and resistance being made by changes in the other dimensions of the carbons; or all the dimensions of the carbons may be varied.

What I claim is—

1. The combination, with the main circuit of a system of incandescent electric lighting in which normally a standard amount of light is to be produced from lamps of a standard resistance and radiating-surface, a constant and uniform pressure of current being maintained, of lamps, such as described, giving less light than the standard of the system, and whose radiating-surface is diminished and resistance increased proportionately as the light-giving power is to fall below the standard, substantially as set forth.

2. The method of diminishing the light-giving capacity of an incandescent electric light below the standard of a system, electro-motive force or pressure therein remaining unchanged, consisting in diminishing the radiating-surface and increasing the resistance proportionately from the standard of the system as the light-giving capacity is to be diminished, substantially as set forth.

This specification signed and witnessed this 19th day of April, 1881.

THOS. A. EDISON.

Witnesses:

BERNARD J. KELLY,  
SAMUEL INSULL.